1965 Condensed Insecticide Recommendations

Insect Control for VEGETABLE CROPS

Commercial vegetable gardeners find it impossible to produce vegetables profitably unless they control insects at maximum efficiency and minimum cost. The housewife of today will not accept unsightly wormy vegetables; not only are wormy fruits and vegetables unappetizing but the waste from trimming increases food costs. Thus the commercial vegetable gardener must produce a quality product that is acceptable and safe to the consumer. Careful and correct use of the right insecticides will enable him to do this.

These condensed insecticide recommendations have been prepared for use by Illinois commercial vegetable farmers; they are not for home gardeners, who should use only those insecticides that are extremely safe to handle, apply, and store. Furthermore, the commercial vegetable gardener must use a wider variety of insecticides than the home gardener in order to obtain maximum insect control at the least cost.

In using insecticides, read the label and carefully follow the instructions. Do not exceed maximum rates recommended; observe carefully the interval between application and harvest, and apply only to crops for which use has been approved. Make a record of the product used, the trade name, the percentage content of the insecticide, the dilution, the rate of application per acre, and the date or dates of application.

Some of the insecticides recommended here can be poisonous to the applicator. In using them, the commercial gardener is expected to use precautions to protect himself, his workers, and his family from undue or needless exposure.

In using these recommendations, always refer to the table on the next page, which lists the limitations and restrictions on use. These limitations apply to the vegetables as human food. If you use any portion of a vegetable for livestock food (tops, stalks, etc.) refer to the label for instructions as to the interval required between application and feeding.

The chemical names used in these tables may be unfamiliar to you. These names are the common coined chemical names and as such are not capitalized. Trade names are capitalized. In the table of limitations the common names are listed first. If the trade name is more commonly used, it is listed in parentheses following the common name. Throughout the tables of recommendations, however, the common name is used if there is one. In case of question, refer to the table of limitations.

Recommendations sometimes change during the growing season. These recommendations are printed only once each year, and are therefore subject to change without notification.

These recommendations were prepared by entomologists of the University of Illinois College of Agriculture and the Illinois Natural History Survey and replace mimeographs NHE 88 through 95.

Leaflets describing the life history, biology, and habits of some of the insects mentioned can be obtained from the offices of county farm advisers or by writing to 280 Natural Resources Building, Urbana. These are indicated by an NHE number in the tables.

Insecticide recommendations for livestock and livestock barns (Circular 898), for field crops (Circular 899), and for the homeowner (Circular 900) can also be obtained from the above offices or from the College of Agriculture, Urbana.

CIRCULAR 897 UNIVERSITY OF ILLINOIS COLLEGE OF AGRICULTURE COOPERATIVE EXTENSION SERVICE
In cooperation with ILLINOIS NATURAL HISTORY SURVEY Urbana, Illinois, January, 1965

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. LOUIS B. HOWARD, *Director*. Acts approved by Congress May 8 and June 30, 1914.

LIMITATIONS IN DAYS BETWEEN APPLICATION AND HARVEST AND OTHER RESTRICTIONS ON USE OF INSECTICIDES RECOMMENDED IN ILLINOIS FOR CONTROL OF VEGETABLE CROP INSECTS

(Blank spaces indicate the material is not recommended for the specific use in Illinois)

Insecticide	Asparagus	Beans	Broccoli	Brussels sprouts	Cabbage	Cauliflower	Horseradish[1]	Radish[1]	Turnip[1]	Onions	Eggplant	Tomatoes
carbaryl (Sevin)	1	0	3	3	3	3	3	3	3,14G	...	0	0
carbophenothion (Trithion)[2]	...	7A	...	...	...	...	...	...	...	...	7	7
diazinon	...	...	5	...	7	5	...	10	10	10	...	1
endosulfan (Thiodan)	...	B	...	...	...	...	...	...	...	...	1	1
Guthion[2]	...	...	15	7	21	15	...	...	...	...	...	...
Kelthane	...	7	...	...	...	...	...	...	...	...	2	2
malathion	...	1	3	7	7	7	7	7	3	3	3	1
mevinphos (Phosdrin)[2]	...	...	1	3	1	3	...	...	3	...	...	...
naled (Dibrom)	...	...	4	4	4	4	...	...	4	...	...	...
parathion[2]	...	...	7	7	10	7	...	15	10	15	15	10
Perthane	...	...	3	3	3	3	...	...	...	...	...	...
rotenone	1	...	...	...	...	...	...	...	...	...	1	1
toxaphene	...	...	...	B	7D	B	C	C	C	...	5	1
trichlorfon (Dylox)	...	...	...	21	21	21	...	...	28C	...	...	21

Insecticide	Potatoes[1]	Collards	Kale	Lettuce	Spinach	Swiss chard	Sweet corn	Cucumbers[3]	Melons[3]	Pumpkins[3]	Squash[3] Winter	Squash[3] Summer
carbaryl (Sevin)	0	14	14	14	14	14	0	0	0	0	0	0
diazinon	...	10	10	10	10	12	0	7	3	...	3	7
endosulfan (Thiodan)	0	...	...	...	...	...	...	...	...	...	...	...
malathion	0	7	7	14	7	7	5	1	1	3	1	1
Meta-systox-R[2]	...	...	...	...	...	...	...	...	14A	14F	14F	14F
mevinphos (Phosdrin)[2]	...	3	3	2	4	...	1	1	1	14	14	1
naled (Dibrom)	...	4	4	4	4	4	...	...	...	...	...	...
parathion[2]	5	10	10	21	7	21	12	15	7	10	15	15
Perthane	...	...	...	4	7	...	...	...	...	...	...	...
rotenone	...	1	1	1	1	1	...	...	...	...	...	...
toxaphene	0	28	28	E	21F	E	...	...	...	...	...	...
trichlorfon (Dylox)	...	28B	21	28B	...	...	...	...	...	...	...	...

[1] Root crops such as radishes, turnips, carrots, potatoes, and sugar beets should not be grown in soil where aldrin, dieldrin, or heptachlor was applied as a soil insecticide the preceding year.

[2] To be used only by professional applicators or commercial gardeners.

[3] Only apply insecticide late in the day after pollination is complete.

A. Not more than twice per season.
B. Not after edible portions or heads begin to form.
C. Do not use tops for feed or food.
D. If outer leaves are stripped; otherwise, B.
E. Do not apply after seedling stage.
F. Not more than once per season.
G. If tops are to be used as feed.

CABBAGE AND RELATED COLE CROPS[1]

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Cabbage maggot[2] (NHE-44)	All season	diazinon	3	Broadcast	Disk in just before planting. Use only for cabbage, cauliflower, and broccoli.
		diazinon granules	1	Furrow	At time of planting, apply on soil surface behind shoe and ahead of press wheel.
		diazinon	4 oz. per 50 gal. transplant water		6 fluid oz. transplant water per plant.
		Guthion	3 oz. W.P. or 2 oz. E.C. per 50 gal. transplant water		
Aphid (NHE-47)	All season	Guthion	¾	Foliage	When aphids appear, but before leaves begin to curl.
		malathion	1		
		mevinphos	¼		
		parathion	0.4		
Diamond-back moth larva; imported cabbage worm; cabbage looper (NHE-45)	All season	Guthion	¾	Foliage	When small worms first appear, and about every 5 to 7 days thereafter.
		naled	1		
		parathion with toxaphene	½ 2		
		Perthane with diazinon or parathion or mevinphos	1 ½ 0.4 ½		
Cutworm	At planting	trichlorfon	1	Soil	At planting, or at base of plant as needed when damage first occurs.
Flea beetle and leafhopper	All season	carbaryl	1½	Foliage	As needed.

[1] Root crops such as radishes, turnips, carrots, potatoes, and sugar beets should not be grown in soil where aldrin, dieldrin, or heptachlor was applied as a soil insecticide the preceding year.

[2] Maggots are resistant to aldrin and dieldrin in some areas of Illinois. Compound 4072 controls these resistant maggots, but does not as yet have label approval.

ASPARAGUS

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Asparagus beetle (NHE-49)	Early and mid-season on spears and ferns	carbaryl	1½	Spears and ferns	As needed, not oftener than every 3 days.
		rotenone	0.2-0.4	Spears	As needed.

COLLARDS, KALE, LETTUCE, SPINACH, SWISS CHARD

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Aphid (NHE-47)	All season	diazinon malathion mevinphos naled parathion	½ 1 ¼ 1 0.4	Foliage	As needed.
Cutworm	On seedling plants	toxaphene trichlorfon	1½ 1	Base of plant and soil	When first damage appears.
Leafhopper	All season	malathion	1	Foliage	When first leafhoppers appear and as needed.
Caterpillar (NHE-45)	All season	naled Perthane with diazinon or malathion or mevinphos or parathion	1 1 ½ 1 ½ 0.4	Foliage	As needed.
Leaf miner	All season	diazinon parathion	½ 0.4	Foliage	When first miners are observed.
Flea beetle	All season	carbaryl rotenone	1 ¼	Foliage	As needed.

CUCUMBERS AND OTHER VINE CROPS

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Striped and spotted cucumber beetles (NHE-46)	Seedling to mature plants	carbaryl	1	Foliage	When beetles first appear; as often as necessary thereafter.
Aphid (NHE-47)	All season	diazinon malathion Meta-systox-R mevinphos parathion	½ 1 ½ ¼ ½	Foliage	When aphids become noticeable.
Squash bug[1] (NHE-51)	All season	parathion	½	Foliage	Do not apply until first eggs are found hatching (about June 15 to July 15).
Leafhopper	July-August	malathion	1	Foliage	As needed.
Squash vine borer	June-September	carbaryl	1	Base of stem and runners for 3 ft. from stem	Weekly applications when vines begin to run—usually 5 applications.
Pickle worm	August-September	carbaryl	1	Foliage	Weekly applications, beginning in late August.
Mites	July-September	malathion mevinphos parathion	1 ¼ ½	Foliage	As needed.

[1] Trichlorfon, 1 lb. per acre, for squash bug will be recommended if label approval is granted.

TOMATOES AND EGGPLANT

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Cutworm (NHE-77)	Early and midseason	carbaryl trichlorfon	2 1	Base of plants or foliage	As needed.
Flea beetle	May-June	carbaryl rotenone	2 0.2-0.4	Foliage	Apply every week as long as needed.
Aphid (NHE-47)	May-July	diazinon endosulfan malathion parathion	¼ ½ 1 0.4	Foliage	As needed, but before leaves curl.
Corn earworm	July-September; occasionally in June	carbaryl toxaphene	2 2	Foliage	Add to weekly applications of fungicide sprays beginning at first fruit set. If spraying is infrequent, use 6 lb. of toxaphene.
Hornworm	July-September	carbaryl trichlorfon	2 1	Foliage	When first small worms appear.
Mites	July-September	carbophenothion Kelthane malathion parathion	1 ½ 1 0.4	Foliage	As needed.
Russet mite	July-September	parathion sulfur dust[1] sulfur spray[1]	0.4 10 10	Foliage	As needed.
Blister beetle (NHE-72)	June-September	carbaryl parathion toxaphene	1½ ¼ 2	Foliage	As needed.
Fruit fly and picnic beetle	August-October	diazinon spray diazinon granules	½ 1	Foliage	When flies or beetles first appear.
		pyrethrin dust[1]	1	Foliage	Apply to hamper immediately after it is filled.

[1] No limitations on use.

ONIONS

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Onion maggot (NHE-50)	All season	diazinon W.P. ethion[1] W.P.	½-1 for 40-50 lb. of seed 1 for 40-50 lb. of seed	Seed	Seed treatment for set onions only. Use lighter dosage of diazinon on sandy, highly mineral soils.
		diazinon granules ethion[1] granules	½-1 ½-2	Furrow	Use 1 lb. active ingredient per acre for rows 12″ apart; ¾ lb. for rows 18″ apart; ½ lb. for rows 24″ apart. Up to twice these amounts are needed for ethion on muck soils.
		diazinon	2	Broadcast	Preplanting; disk into upper 1 to 2 inches of soil. Supplement with foliage spray below.
		diazinon malathion	⅓ 1	Foliage	Supplemental to soil treatment. Make first application when first adult flies are seen; make another 1 week later. From then on only as necessary.
Thrips (NHE-48)	Midseason and late season	diazinon parathion	½ ½	Foliage	When injury first appears and every 10 days as necessary.

[1] No restrictions when used as recommended.

SWEET CORN

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Rootworm (NHE-26) Seed corn maggot (NHE-27) Seed corn beetle (NHE-27) Wireworm (NHE-43)	April-August	diazinon	1	Row	Apply on soil surface behind planter shoe and ahead of press wheel.
Cutworm (NHE-38)	April-June	carbaryl	1½	Base of plants	When first damage appears. Use large quantities of water per acre.
Flea beetle (NHE-36)	April-July	carbaryl	1½	Foliage	As necessary.
Japanese beetle (NHE-32)	July-September	carbaryl	1	Ear zone	As necessary.
Corn borer	June-September	carbaryl spray, dust, or granules diazinon granules	2 1½	Foliage	Make first application when tassel ratio is 30 to 40. Repeat every 4 to 5 days as long as field has 20 or more unhatched egg masses per 100 plants.
Corn earworm[1] (NHE-33)	June-September	carbaryl	2	Ear zone	Market corn: At first silk and every 2 to 3 days for 5 to 8 applications. On very early or late planted corn, treatment may be necessary before silking when eggs are being laid on stalks and flag leaves. Canning corn: At 30 to 50% silk and every 3 days thereafter until corn is within 1 week of harvest.
Sap beetle (NHE-10)	July-September	carbaryl diazinon malathion parathion	2 1 1 ½	Foliage	When adults first appear in field; usually between pollen-shedding and silk-drying.
Corn leaf aphid (NHE-29)	July-September	malathion mevinphos parathion	1 ¼ ¼	Foliage	As needed to produce attractive ears for fresh market.

[1] Azodrin will be recommended upon label approval.

POTATOES[1]

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Flea beetle	May-July	carbaryl	1	Foliage	When first damage appears on leaves, and repeat as needed.
		endosulfan spray	½		
		endosulfan dust	1		
Colorado potato beetle	May-July	carbaryl	1	Foliage	As needed.
		endosulfan spray	½		
		endosulfan dust	1		
Potato leafhopper (NHE-22)	May-July	carbaryl	1	Foliage	Weekly applications when leafhoppers first appear.
		endosulfan spray	½		
		endosulfan dust	1		
		phorate[2] granules	2 to 3	Soilband	Place on either or both sides of row at planting but not in contact with seed. Use lower rate on sandy soils and heavier rate on heavy soils. Do not use on muck soils.
Aphid (NHE-47)	All season	endosulfan spray	½	Foliage	As needed.
		endosulfan dust	1		
		malathion	1		
		parathion	¼		
		phorate[2] granules	2 to 3	Soilband	As for leafhoppers.
Blister beetle (NHE-72)	All season	carbaryl	1½	Foliage	As needed.
		toxaphene	2		
Wireworm (NHE-43)	All season	phorate[2] granules	2 to 3	Soil	Preplanting, disk in; or use as soilband at planting.
White grub (NHE-23)	All season	phorate[2] granules	3	Soil	Preplanting, disk in; or use as soilband at planting.
Grasshopper (NHE-74)	July-September	carbaryl	¾	Foliage	As needed, control in fence rows, roadsides, ditch banks, etc., before migration.
		toxaphene	1½		

[1] Potatoes should not be grown in soil where aldrin, dieldrin, or heptachlor was applied as a soil insecticide the preceding year.
[2] No restriction when used as recommended.

BEANS

Insect	Time of attack	Insecticide	Lb. of active ingredient per acre	Placement	Timing of application
Seed maggot (NHE-27)	All season	dieldrin[1] lindane[1]	Manufacturer's directions	Seed	At seeding.
		phorate[1] granules	1½	Soilband	Place on either or both sides of row at planting but not in contact with seed.
Bean leaf beetle (NHE-67)	Early and late season	carbaryl malathion	1 1	Foliage	When feeding first appears and weekly for 2 or 3 applications as needed.
Leafhopper (NHE-22) and plant bug (NHE-68)	All season	carbaryl malathion	1 1	Foliage	Before plants become yellow and stunted. Repeat applications at weekly intervals as necessary.
		phorate[1] granules	1½	Soilband	As for seed maggot.
Mexican bean beetle	Midseason and late season	carbaryl malathion	½ 1	Foliage	When occasional leaves show lacework feeding.
		phorate[1] granules	1½	Soilband	As for seed maggot.
Aphid (NHE-47)	All season	endosulfan malathion	½ 1	Foliage	Usually applied when a few aphids can be found on each plant, but before leaves begin to curl and deform.
		phorate[1] granules	1½	Soilband	As for seed maggot.
Blister beetle (NHE-72)	Midseason and late season	carbaryl	1½	Foliage	As needed.
Corn earworm (NHE-33)	Late season	carbaryl	1½	Foliage	As needed, but usually after September 1. Worms may be present before bloom.
Mites	Midseason and late season	carbophenothion Kelthane malathion	¾ 0.4 1	Foliage	As needed, but especially during drouthy periods particularly if carbaryl has been used on crops.
		phorate[1] granules	1½	Soilband	As for seed maggot.

[1] No restrictions when used as recommended.

FOR YOUR PROTECTION

Always handle insecticides with respect. The persons most likely to suffer ill effects from insecticides are the applicator and his family. Accidents and careless, needless overexposure can be avoided. Here are a few easy rules that if followed will prevent most insecticide accidents:

1. Wear rubber gloves when handling insecticide concentrates.
2. Do not smoke while handling or using insecticides.
3. Keep your face turned to one side when opening insecticide containers.
4. Leave unused insecticides in their original containers with the labels on them.
5. Store insecticides out of reach of children, irresponsible persons, or animals; store preferably in a locked cabinet.
6. Wash out and bury or burn empty insecticide containers.
7. Do not put the water-supply hose directly into the spray tank.
8. Do not blow out clogged nozzles or spray lines with your mouth.
9. Wash with soap and water exposed parts of body and clothes contaminated with insecticide.
10. Do not leave puddles of spray on impervious surfaces.
11. Do not apply to fish-bearing or other water supplies.
12. Do not apply insecticides, except in an emergency, to areas with abundant wildlife.
13. Do not apply insecticides near dug wells or cisterns.
14. Do not spray when weather conditions favor drift.
15. Observe all precautions listed on the label.

15M—1-65—85041
5M—3-65—86143